The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 21 and 23-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hongo et al 6,921,466 in view Hongo et al 6,716,330.

Hongo et al '466 teaches multiple embodiments of the design of a substrate processing system. Hongo et al teaches in multiple embodiments of a substrate processing system which is comprised of the following elements: a factory interface having a substrate transfer robot or first robot positioned therein, the factory interface being configured to communicate with at least one substrate containing cassette; and at least two of the substrate processing modules/units are interchangeable within the system such that the substrate processing modules are in detachable communication

with and removable from the factory interface (see paragraphs 0038-0039,0312 and 0336). Hongo et al '466 in Figure 47 and Figure 49 shows electroplating processing modules 512 each of which is comprised of two cells or rooms. Hongo et al '466 teaches with reference to Figure 47 that a series of operations are performed by the module which include electroplating and cleaning (see column 53 line 55 to column 54 line 27). Hongo et al '466 teaches at column 54 lines 24-27 that electroplating and cleaning may occur in different cells or rooms (cup-type electroplating cell and cleaning tank). Hongo et al '466 fails to teach the module includes an electroless plating cell and a pretreatment/post treatment cell. However, it would have been obvious the Hongo et al '466 plating cell assembly of the substrate treatment module as taught in Figure 47 is capable of applying an electroless plating solution onto the substrate dependent on the coating material thereto since the nozzles in Figure 47 are capable of applying a variety of treatment liquids including an electroless plating solution. Further, it would have been obvious to arrange the pretreatment/post treatment cell within the plating treatment module of Hongo et al '466 since as discussed above Hongo et al '466 teaches plating and cleaning may occur in different cells or rooms if plating is occurs in a cup-type cell and especially since Hongo et al '330 shows that electroless plating and pre-treatment/post treatment of the substrate occurs in separate cells or rooms with the pre-treatment/post treatment immediately adjacent the electroless plating cell or room.

Alternatively, Hugo et al '466 shows in Figure 49 a substrate processing system wherein the plating unit/module 512 includes two separate cells/rooms like those in Figure 47 and Figure 14. As discussed above, Hongo et al '466 fails to teach module

512 includes an electroless plating cell and a pretreatment/post treatment cell. However, it would have been obvious the Hongo et al '466 plating cell assembly of the substrate treatment module as taught in Figure 49 is capable of applying an electroless plating solution onto the substrate dependent on the coating material thereto since the nozzles in the plating unit depicted in Figure 14 are capable of applying a variety of treatment liquids including an electroless plating solution. Further, it would have been obvious to arrange the pretreatment/post treatment cell within the plating treatment module of Hongo et al '466 since as discussed above Hongo et al '466 teaches plating and cleaning may occur in different cells or rooms if plating is occurs in a cup-type cell and especially since Hongo et al '330 shows that electroless plating and pre-treatment/post treatment of the substrate occurs in separate cells or rooms with the pre-treatment/post treatment immediately adjacent the electroless plating cell or room. Further, it would have been obvious given the modifications of the Hongo et al '466 system as discussed above to provide an additional substrate processing module which includes a plating cell and a pretreatment/post treatment cell for the obvious advantage of increasing the throughput of the substrate processing system for plating and especially in view of Figure 47 which shows a substrate processing system providing at least two modules each of which includes a plating cell. Thus claim 21 is obvious over the above cited references.

With respect to claim 24, the pre-treatment/post treatment cell of the substrate in the Hongo et al '466 system as modified is conducted to at least one of rinse or clean via a cleaning unit which includes a spin/rinsing/drying unit. With respect to claims 26-

28, Hongo et al ‘446 system as modified teaches each of the substrate processing units/modules are interchangeable within the system and therefore the plating and pre-treatment/post treatment cells which are part of the modules/units are interchangeable within the system. With respect to claim 23, it would have been prima facie obvious given the modifications of the Hongo et al '466 system as discussed to arrange a second robot within the at least two substrate processing module such that it interacts with the first robot to transfer the substrate from the factory interface to the processing modules with cells arranged therein since Hongo et al '330 teaches using a robot to transfer the substrate from the pre-treatment/post treatment cell to the plating cell and further obvious to coordinate the robots in the system to increase productivity of the system.

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hongo et al 6,921,466 in view of Hongo et al 6,716,330 and Verhaverbeke et al 2003/0045098.

Hongo et al ‘466 and Hongo et al ‘330 are applied for reasons noted but fails to teach a substrate transfer robot arranged in the factor interface is comprised a linear track-type robot configured to access each substrate processing modules. However, it would have been obvious to modify Hongo et al ‘466 apparatus by substituting its substrate transfer robot with a linear track-type robot configured to access each of substrate processing modules such as taught by Verhaverbeke et al in Figure 18A-18B for obvious advantage of simplification in design.

Claims 21 and 23-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hongo et al 6,921,466 in view Dordi et al 6,267,853.

Hongo et al '466 teaches the design of an substrate processing system as shown in Figure 31 which is comprised of the following elements: a factory interface having a substrate transfer robot or first robot positioned therein, the factory interface being configured to communicate with at least one substrate containing cassette; and at least two of the substrate processing modules are interchangeable within the system such that the substrate processing modules are in detachable/removable communication with the factory interface (see Figure 36 or Figure 45 and see paragraphs 0038-0039,0312 and 0336). Hongo et al '466 fails to teach substrate processing system includes at least two substrate processing modules each of which include an electroless plating cell and pretreatment/post treatment cell.

Dordi et al teaches the design of a substrate processing system as shown in Figure 17 which is comprised of electroless plating cell or room and pretreatment/post treatment cell or room which includes spin rinse drying of the substrate occurs.

Therefore, it would have been obvious to modify Hongo et al '466 system by providing at least two substrate processing system each of which include an electroless plating cell and cleaning cell or pretreatment/post treatment cell since Dordi et al using two substrate processing stations each of which include a electroless plating cell and cleaning or pretreatment/post treatment cell in which spin rinse drying of the substrate occurs for the taught advantage of increasing the throughput rates of the system (see Dordi et al at column 12 lines 27-29). Thus claim 21 is obvious over the above combination of references.

With respect to claim 24, Hongo et al teaches configured to conduct at least one of rinsing or cleaning via a cleaning unit which includes a spin/rinsing/drying unit. With respect to claims 25-28, Hongo et al teaches each of the units in the semiconductor substrate processing system are interchangeable within the system. With respect to claim 23, Hongo et al teaches the at least two substrate processing modules further comprises a second substrate transfer robot or third robot positioned therein, the second substrate transfer robot or third robot being configured to transfer substrates between the substrate transfer robot or first robot in the factory interface, the pretreatment/post treatment cell, and the electroless processing cell (see Figure 43, note Hongo et al teaches that plating may be formed by electroless plating in the embodiment depicted in Figure 43).

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hongo et al 6,921,466 in view of Dordi et al 6,267,853 and Verhaverbeke et al 2003/0045098.

Hongo et al and Dordi et al are applied for reasons noted but fails to teach a substrate transfer robot comprised a linear track-type robot configured to access each substrate processing modules. However, it would have been obvious to modify Hongo et al apparatus by substituting its substrate transfer robot with a linear track-type robot configured to access each of substrate processing modules such as taught by Verhaverbeke et al in Figure 18A-18B for obvious advantage of simplification in design.

Applicant's arguments filed 8/14/20007 and 2/5/2007 have been fully considered but they are not persuasive.

Applicant's argument that Hongo et al fails to teach a detachable unit includes two cells, that is, a pretreatment/post treatment cell and an electroless processing cell is found to be to be non-persuasive. Hongo et al '466 in Figure 47 and Figure 49 shows electroplating processing modules 512 each of which is comprised of two cells or rooms. Hongo et al '466 teaches with reference to Figure 47 that a series of operations are performed by the module which include electroplating and cleaning (see column 53 line 55 to column 54 line 27). Hongo et al '466 teaches at column 54 lines 24-27 that electroplating and cleaning may occur in different cells or rooms (cup-type electroplating cell and cleaning tank). Hongo et al '466 fails to teach the module includes an electroless plating cell and a pretreatment/post treatment cell. However, it would have been obvious the Hongo et al '466 plating cell assembly of the substrate treatment module as taught in Figure 47 is capable of applying an electroless plating solution onto the substrate dependent on the coating material thereto since the nozzles in Figure 47 are capable of applying a variety of treatment liquids including an electroless plating solution. Further, it would have been obvious to arrange the pretreatment/post treatment cell within the plating treatment module of Hongo et al '466 since as discussed above Hongo et al '466 teaches plating and cleaning may occur in different cells or rooms if plating is occurs in a cup-type cell and especially since Hongo et al '330 shows that electroless plating and pre-treatment/post treatment of the substrate occurs in separate

cells or rooms with the pre-treatment/post treatment immediately adjacent the electroless plating cell or room.

Alternatively, Hugo et al ‘466 shows in Figure 49 a substrate processing system wherein the plating unit/module 512 shows that it includes two separate cells/rooms like those in Figure 47 and Figure 14. As discussed above, Hongo et al ‘466 fails to teach module 512 includes an electroless plating cell and a pretreatment/post treatment cell. However, it would have been obvious the Hongo et al '466 plating cell assembly of the substrate treatment module as taught in Figure 49 is capable of applying an electroless plating solution onto the substrate dependent on the coating material thereto since the nozzles in the plating unit depicted in Figure 14 are capable of applying a variety of treatment liquids including an electroless plating solution. Further, it would have been obvious to arrange the pretreatment/post treatment cell within the plating treatment module of Hongo et al ‘466 since as discussed above Hongo et al ‘466 teaches plating and cleaning may occur in different cells or rooms if plating is occurs in a cup-type cell and especially since Hongo et al ‘330 shows that electroless plating and pre-treatment/post treatment of the substrate occurs in separate cells or rooms with the pre-treatment/post treatment immediately adjacent the electroless plating cell or room. Further, it would have been obvious given the modifications of the Hongo et al ‘466 system as discussed above to provide an additional substrate processing module which includes a plating cell and a pretreatment/post treatment cell for the obvious advantage of increasing the throughput of the substrate processing system for plating and

especially in view of Figure 47 which shows a substrate processing system providing at least two modules each of which includes a plating cell.

Applicant's argument that Hongo et al '466 fails to teach a detachable unit includes a pretreatment/post treatment cell and an electroless processing cell is found to be to be non-persuasive since electroless plating and pretreatment/post treatment of the substrate such as cleaning of the substrate presented within the cell is taught by Dordi et al as well as Hongo et al '446 as depicted in Figure 36.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brenda A. Lamb whose telephone number is (571) 272-1231. The examiner can normally be reached on Monday-Tuesday and Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton, can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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TQAS, TC 1700